

**CLAIMS**

What is claimed is:

1. A semiconductor substrate for a micro-fluid ejecting device, the substrate comprising:  
a plurality of fluid ejection devices disposed on the substrate;  
a plurality of driver transistors disposed on the substrate for driving the plurality  
of fluid ejection devices; and  
5 a programmable memory matrix containing embedded programmable memory  
devices, the matrix being operatively connected to the micro-fluid ejecting  
device for collecting and storing information on the semiconductor  
substrate for operation of the micro-fluid ejecting device.
2. The semiconductor substrate of claim 1 wherein the embedded programmable  
memory devices comprise transistors selected from the group consisting of PMOS  
and NMOS floating gate transistors.
3. The semiconductor substrate of claim 1 wherein the embedded programmable  
memory devices have a memory density of greater than about 200 bits per square  
millimeter.
4. The semiconductor substrate of claim 1 wherein the programmable memory matrix  
comprises floating gate transistors.
5. The semiconductor substrate of claim 1 wherein the programmable memory matrix  
comprises more than 128 memory devices.
6. The semiconductor substrate of claim 1 wherein the embedded programmable  
memory devices are programmable by applying a voltage of greater than about 8  
volts for at least about 100 microseconds.
7. The semiconductor substrate of claim 1 wherein the embedded programmable  
memory devices will pass from about 10 to about 200 microamps of current at  
about 2 volts in a programmed state.

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8. The semiconductor substrate of claim 1 wherein the embedded programmable memory devices will pass less than 3 microamps of current at about 2 volts in an unprogrammed state.
9. The semiconductor substrate of claim 1 further comprising a layer disposed adjacent the programmable memory matrix, said layer having properties sufficient to block ultraviolet light having a wavelength below about 400 nanometers.
10. A printhead for an ink jet printer containing the semiconductor substrate of claim 9.
11. The printhead of claim 10 wherein the layer comprises a material selected from the group consisting of a photoresist material, and a metal layer, said layer having ultraviolet light blocking properties.
12. The printhead of claim 10 wherein the layer comprises a polyimide nozzle plate.
13. An ink jet printer cartridge for an ink jet printer comprising:
  - a cartridge body having an ink supply source and a printhead attached to the cartridge body in fluid communication with the ink supply source, the printhead comprising:
    - a semiconductor substrate having a plurality of ink ejection devices disposed on the substrate;
    - a plurality of driver transistors disposed on the substrate for driving the plurality of ink ejection devices;
    - a programmable memory matrix containing embedded programmable memory devices, the matrix being operatively connected to ink jet printer for collecting and storing information on the semiconductor substrate for operation of the printer; and
    - a nozzle plate attached to the semiconductor substrate for ejecting ink therefrom upon activation of the ink ejection devices.

**Lexmark Docket No.: 2003-0434.02**

14. The ink jet printer cartridge of claim 13 wherein the embedded programmable memory devices comprise transistors selected from the group consisting of PMOS and NMOS floating gate transistors.
15. The ink jet printer cartridge of claim 13 wherein the embedded programmable memory devices have a memory density of greater than about 200 bits per square millimeter.
16. The ink jet printer cartridge of claim 13 wherein the programmable memory matrix comprises floating gate transistors.
17. The ink jet printer cartridge of claim 13 wherein the programmable memory matrix comprises more than 128 memory devices.
18. The ink jet printer cartridge of claim 13 wherein the embedded programmable memory devices are programmable by applying a voltage of greater than about 8 volts for at least about 100 microseconds.
19. The ink jet printer cartridge of claim 13 wherein the embedded programmable memory devices will pass from about 10 to about 200 microamps of current at about 2 volts in a programmed state.
20. The ink jet printer cartridge of claim 13 wherein the embedded programmable memory devices will pass less than 3 microamps of current at about 2 volts in an unprogrammed state.
21. The ink jet printer cartridge of claim 13 further comprising a photoresist layer disposed adjacent the programmable memory matrix, said photoresist layer having properties sufficient to block ultraviolet light having a wavelength below about 400 nanometers.

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22. The ink jet printer cartridge of claim 13 wherein the nozzle plate comprises a polyimide nozzle plate having properties sufficient to block ultraviolet light having a wavelength below about 400 nanometers.